REMARKS

Claim 1 has been amended to include the limitation of claim 5. More particularly, claim 1 has been amended to include the limitation that the nonaqueous electrolyte solution of the claimed nonaqueous electrolyte secondary battery contains 10 - 20 % by volume of ethylene carbonate. Claim 5 has been canceled.

Claims 4 and 10 have been canceled.

Referring to the "Response to Amendment" section of the Final Action, applicants acknowledge with appreciation the Examiner's treatment of the reply filed December 18, 2009, as being *bona fide* notwithstanding the failure to include the proper status identifiers for claims 8 and 9. The status identifiers for claims 8 and 9 have been corrected to "withdrawn" in the present response.

Referring to the Final Action and, first, to the 35 U.S.C. § 101 and 35 U.S.C. § 112, second paragraph, rejections of claims 4 and 10, claims 4 and 10 have been canceled. The 35 U.S.C. § 101 and 35 U.S.C. § 112, second paragraph, rejections are now moot.

Referring, second, to the rejection of claims 1-6 and 10 under 35 U.S.C. § 102(b) as being anticipated by JP 2002-358963 (identified by the Office as "Yonekawa"), and the 35 U.S.C. § 103(a) rejection of claims 11 and 12 as being unpatentable over Yonekawa, the Office concludes in the Final Office Action that,

contrary to applicants' argument in the reply filed December 18, 2009, there will, in fact, be unreacted ZrO_2 particles in Example 1 of Yonekawa (page 8, line 19, to page 9, line 9, of the Final Office Action).

The calculation of the Office is based on the balance of oxygen atoms and assumes that the amount of oxygen does not vary during the reaction. However, this assumption is not correct. A firing process for producing a transition metal oxide is generally performed in air. Therefore, oxygen can be supplied from the air without limitation. Further, carbon reacts with oxygen to produce carbon dioxide which is eliminated from the reaction system. Accordingly, the calculation should be based on the amounts of the metal atoms, not on the amount of oxygen. As described below, it is clear that all of the raw materials including ZrO_2 will be reacted and that there will not be unreacted ZrO_2 in the final product in Example 1 of Yonekawa.

Referring to the copy of "Example 1 of Yonekawa" attached to this letter, 41g of Co_3O_4 correspond to 0.17021 moles, 19.0g of Li_2CO_3 correspond to 0.25714 moles, and 0.06g of ZrO_2 corresponds to 0.00048693 moles. Accordingly, Li = 0.51428 moles (0.25714 x 2), Co = 0.51081 moles (0.17021 x 3), and Zr = 0.00048693 moles. Therefore, Li:Co:Zr is 1:0.993:0.001 which is substantially equal

to Li:Co:Zr = 1.001:0.999:0.001 ($Li_{1.001}Co_{0.999}Zr_{0.001}O_{2.001}$). Accordingly, there is not unreacted ZrO_2 in the final product in Example 1 of Yonekawa and the 35 U.S.C. § 102 and 35 U.S.C. § 103(a) rejections are not correct. Removal of these rejections is requested.

Referring, third, to the rejections of claims 1-4, 6, and 10-12 under 35 U.S.C. § 103(a) as being unpatentable over US 2004/0121234 (identified by the Office as "Le"), and the rejection of claim 5 under 35 U.S.C. § 103(a) as being unpatentable over Le in view of Shen, U.S. Patent No. 5,030,528, claim 1 has been amended to include the limitation that the nonaqueous electrolyte solution of the claimed nonaqueous electrolyte secondary battery contains 10 - 20 % by volume of ethylene carbonate.

Le does not disclose the amount of ethylene carbonate present in the electrolyte solution. Shen discloses 10 - 20 % by volume of ethylene carbonate. However, the use of 10 - 20 % by volume of ethylene carbonate in the nonaqueous electrolyte solution of the nonaqueous electrolyte secondary battery of the present invention as defined in the claims produces unexpected results. The unexpected results are demonstrated by the data of Table 2 of the present specification.

The data of Table 2 shows that Batteries B1 and B2 containing 10 - 20 % by volume of ethylene carbonate exhibit materially improved capacity retention after 300 cycles as compared with battery B3 containing 30 % by volume of ethylene carbonate. However, in case of comparative batteries Y1 and Y2 in which the Zr content is 0 mol %, i.e., a zirconium-containing compound is not adhered onto particle surfaces of lithium cobalt oxide, battery Y2 containing 10 - 20 % by volume of ethylene carbonate does not exhibit improved capacity retention as compared with battery Y1 containing 30 % by volume of ethylene carbonate.

These data show that a nonaqueous electrolyte solution containing 10 - 20 % by volume of ethylene carbonate as disclosed in Shen does not necessarily provide a nonaqueous electrolyte secondary battery having improved characteristics. The unexpected results of the present invention can be obtained only by the combination of the specific active material recited in claim 1 and 10 - 20 % by volume of ethylene carbonate.

The comparative data in the application rebut the Office's case of prima facie obviousness based on Le and Shen and demonstrate the patentability of the claims of the application under 35 U.S.C. § 103(a).

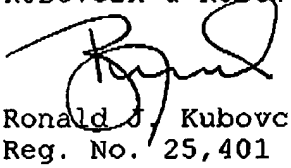
Removal of the 35 U.S.C. § 103(a) rejections based on Le and the combination of Le and Shen is requested.

The foregoing is believed to be a complete and proper response to the Final Office Action dated March 10, 2010, and is believed to place this application in condition for allowance.

In the event that this paper is not considered to be timely filed, applicants hereby petition for an appropriate extension of time. The fee for any such extension may be charged to Deposit Account No. 111833.

In the event any additional fees are required, please also charge Deposit Account No. 111833.

Respectfully submitted,
KUBOVCIK & KUBOVCIK



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Attachment: "Example 1 of Yonekawa"

Example 1 of Yonekawa

Co_3O_4 (1 mole = 240.8g)	41g	=	0.17021 moles
Li_2CO_3 (1 mole = 73.89g)	19.0g	=	0.25714 moles
ZrO_2 (1 mole = 123.22g)	0.06g	=	0.00048693 moles

	molar ratio
Li = 0.51428 moles	1
Co = 0.51081 moles	0.993
Zr = 0.00048693 moles	0.001

O(oxygen) = (0.17027 × 4) + (0.25714 × 3) + (0.00048693 × 2)
= 0.68108 + 0.77142 + 0.00097386
= 1.45347 moles

1.45347/2.001 = 0.73